

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for treating low solids content sediment from a body of water, said sediment including halogenated organic compound and heavy metal contaminants, the method comprising the steps of:

(1) dewatering the sediment to obtain a stream having a concentrated solids content ~~not greater than~~ of about 50% by weight comprised of inorganic and organic fractions;

(2) adding air or oxygen, a supplemental fuel, and a reactant to the concentrated solids stream, said reactant selected from the group consisting of sodium carbonate, sodium hydroxide, hydrogen peroxide, iron, aliphatic hydrocarbons, and mixtures thereof;

(3) pressurizing the concentrated solids stream to a pressure in the range of about 800 to 2500 psi;

(4) preheating the pressurized stream by passing the stream from step (6) through a heat exchanger;

(5) conveying the preheated stream into a reactor with the fuel addition sufficient to maintain a self-sustaining reaction temperature to dehalogenate and decompose or denature the contaminant compounds;

(6) returning the dehalogenated and decomposed or denatured stream to the heat exchanger to provide heat for the preheating step; and,

(7) reducing the pressure of the stream for further processing by directing the stream through a small variable orifice to generate a liquid and atomized solids fraction and a volatilized fraction;

(8) condensing the volatilized fraction;

(9) combining the condensate with the liquid and atomized solids fraction to provide a second concentrated solids stream;

(10) adding the water fraction from the dewatering step to the second concentrated solids stream to provide a dilute solids stream; and,

(11) gravimetrically separating the solids from the dilute solids stream in stages to separate the heavy metals from the remaining dilute solids stream to provide a heavy metals solid stream and a remaining solids stream.

2. (Currently Amended) The method as set forth in claim 1 including the step of operating the reactor at a temperature in the range of 800°F to 2000°F.

3. (Original) The method as set forth in claim 1 including, prior to said pressurizing step, the step of adding to the concentrated solids stream a catalyst selected from the group consisting of carbon, graphite, and iron.

4. (Cancelled)

5. (Currently Amended) The method as set forth in claim 4 1 including the steps of:

(1) dewatering the heavy metals solids stream to provide a concentrated heavy metals fraction and a liquid fraction; and,

(2) dewatering the remaining solids stream to provide a treated solids fraction and a second liquid fraction.

6. (Currently Amended) The method as set forth in claim 1 including the steps of:

(1) providing a first barge for process equipment utilized in performing steps (1) and (2);

(2) providing a second barge for process equipment utilized in performing steps (3) - (7); and,

(3) providing one or more low pressure process flow ~~connection~~ connections between said barges.

7. (Cancelled)

8. (New) A method for treating low solids content sediment from a body of water, said sediment including halogenated organic compound contaminants, the method comprising the steps of:

- (1) dewatering the sediment to obtain a stream having a concentrated solids content of about 50% by weight comprised of inorganic and organic fractions;
- (2) adding air or oxygen, a supplemental fuel, and a reactant to the concentrated solids stream, said reactant selected from the group consisting of sodium carbonate, sodium hydroxide, hydrogen peroxide, iron, aliphatic hydrocarbons, and mixtures thereof;
- (3) pressurizing the concentrated solids stream to a pressure in the range of about 800 to 2500 psi;
- (4) preheating the pressurized stream by passing the stream from step (6) through a heat exchanger;
- (5) conveying the preheated stream into a reactor with the fuel addition sufficient to maintain a self-sustaining reaction temperature to dehalogenate and decompose or denature the contaminant compounds;
- (6) returning the dehalogenated and decomposed or denatured stream to the heat exchanger to provide heat for the preheating step;
- (7) reducing the pressure of the stream for further processing; and,
- (8) the pressurizing step is performed with a high pressure hydraulic pump, and the step of adding air or oxygen comprises adding the air or oxygen directly into a suction of the pump.